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INDIAN SEAFOODS

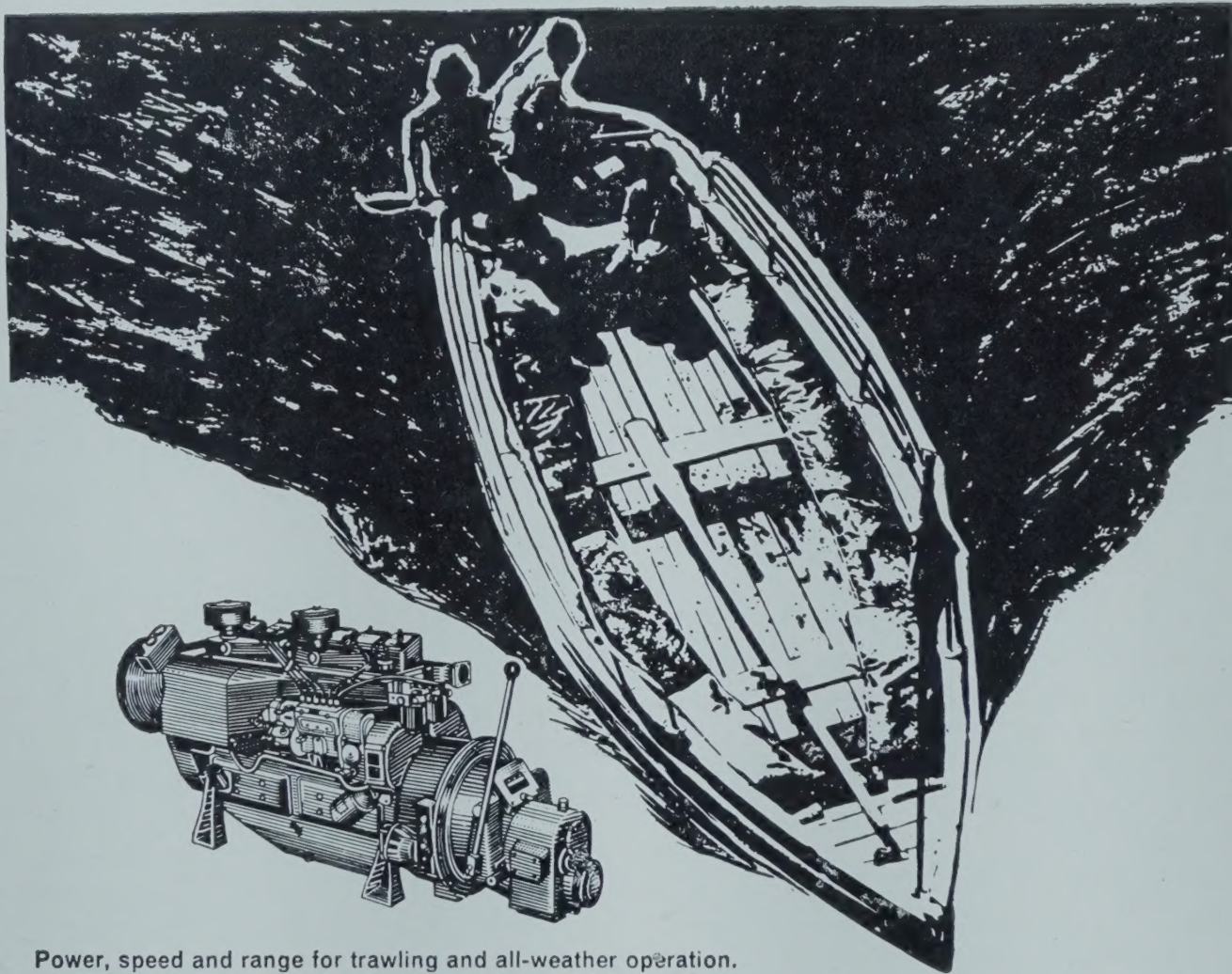
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HARVESTING THE SEAS FOR THE INTERNATIONAL MARKET

A CHALLENGE AND AN OPPORTUNITY

Shri. V. M. Srikumaran Nayar
*Chairman,
Marine Products Export
Promotion Council, Ernakulam*

International trade in fishery products has increased tremendously in recent times. Made possible largely by technological advances in processing, preservation and packaging, more than 40 per cent of the world catch now cross national borders in one form or other and more recent technological advances are quickening the pace.

Present Position

India did benefit substantially from this growing trade; in fact her resource potential is capable of attracting a much greater share of this prospering global trade. Today, this fast developing industry earn for the country foreign exchange worth about Rs. 175 million a year by the export of a variety of seafoods thereby winning for the country a place among world suppliers of processed and preserved specialty foods to the sophisticated and quality-conscious markets of the world. It is, nevertheless, a matter for serious study as to how the export effort of the industry could be adequately stepped up to attain optimum level

of exports as warranted by the country's fishery resources and the fast developing world demand for fishery products.

The Marine Products Export Promotion Council set up by the Government of India in 1961, has apart from its promotional activities on the marketing side, been bestowing considerable attention to the developmental problems and requirements of the industry as well.

Scope for Development

The immense scope for development of the export sector of the industry both on an immediate and long-term basis came to be widely recognised for the first time at the Seminar on Marine Products Exports jointly organised a couple of years ago by the Marine Products Export Promotion Council and the Indian Institute of Foreign Trade. This Seminar which was attended by leaders in the industry, leading scientists and technologists connected with fisheries research and fisheries development, fisheries

administrators of maritime states and top officials of the concerned Ministries of the Government of India had no hesitation in recommending a target envisaging a three-fold increase in exports by the end of the Fourth Plan. This was followed by a more intensive study by the Marine Products Export Promotion Council with particular reference to the measures required to be taken for an all-round integrated development of the export production sector of the industry and thereby to ensure an adequate level of production for the attainment of the export target. A comprehensive project report was, therefore, prepared and submitted to the Government of India. Most of the developmental schemes recommended in the report have been accepted and are now in various stages of implementation by the Central and State authorities concerned, as part of the Fourth Plan.

The basic developmental approach has been mainly on the following lines :-

- 1) To step up the fishing effort, especially in the field of off-shore fishing, to ensure an adequate level of catch.
- 2) To build up and strengthen the infrastructure of the industry, having in view the long-term needs as well.

Expansion of the Fishing Fleet

Although in the course of the Third Plan period mechanised fishing craft and gear have progressively replaced outmoded crafts and gear, almost all the mechanised boats launched so far were only small vessels varying in length from 30 to 42 feet. These vessels operate only in the inshore waters within about 10 to 20 mile range of the land. Fishing even today is, therefore, mostly confined to the inshore waters, while the offshore resources, which are much greater, remain virtually untapped. For a fuller utilisation of the resources, it is necessary to press into service large trawlers capable of operating in off-shore waters and more mechanised boats for a more intensive exploitation of the inshore waters. The additional craft requirements and the corresponding capital investment for the next five years have been estimated as follows :-

As the existing entrepreneurs in the industry have already made a very large investment in mechanised boats, it is very unlikely that they could mobilise to any substantial extent the further resources required for the expansion of the fishing fleet, especially in the matter of big trawlers. Various schemes are, therefore, now under the consideration of the Government for the import of big trawlers utilising foreign credit, for being made available to the industry. The Government would also be prepared to consider proposals from the private sector for the import of trawlers on foreign credit to be arranged by them or on the basis of foreign collaborations. In this massive effort to harvest the seas for the international markets the private sector has a key role to play.

Infra-Structure

An essential pre-requisite for the development of any industry, and more so in the case of the seafood industry, is that the necessary infra-structure should be built up. Implementation of various schemes in this regard is in progress and some of them deserve special mention here.

Localised Development

Recognising the advantages of earmarking certain specially suited areas in selected centres

exclusively for the development of the fishing and seafood industry, the Marine Products Export Promotion Council had recommended that initially, the area between the Mattancherry bridge and the Marakkadavu Junction in Cochin may be acquired and set apart exclusively for the development of the seafood industry. This recommendation has been accepted by the Government and further action is in progress. With the implementation of this recommendation, adequate space will be available at reasonable prices in this area not only for the expansion of the existing units but also for the setting up of many more processing units, and for providing necessary facilities for landing jetties, workshops, boat building yards, slipways, ice plants, cold storages, etc.

Ice

An abundant supply of ice required for preserving the catch from the time it is hauled aboard until it is finally processed is essential pre-requisite. Schemes to adequately augment the ice production are under various stages of implementation by the Fisheries Department of the Kerala Government and the Kerala Fisheries Corporation. These include the 100 ton ice plant and 300 ton cold storage being constructed in the Willingdon Island by the Department of Fisheries, Kerala on priority basis on the specific recommendation of the Marine Products Export Promotion Council. Several ice plant are coming up in the private sector as well and it is estimated that ice production capacity would soon attain the required level.

Water

The industry was to some extent handicapped due to the inadequacy of protected water supply

	Number of Boats.		Capital requirements	Foreign
	Small boats.	Big boats.		Exchange Component
			(Rupees in Lakhs)	
1st Year	500	42	800.50	443.00
1nd Year	500	45	817.50	456.00
3rd Year	400	37	653.00	355.00
4th Year	350	26	521.50	261.00
5th Year	250	10	347.50	175.00
Total	2000	160	3140.00	1690.00

for the requirements of the seafood processing units. To step up the supply of water adequately in the Cochin area, a scheme to provide a special pipeline for bringing water to cater exclusively to the needs of the seafood industry, having also in view the proposed expansion of the industry, has been finalised and taken up for implementation by the Kerala Government. Suitable schemes for supply of water to the seafood processing units in other centres like Neendakara, Calicut etc. have also been evolved and are being pushed through.

Electricity

Non-availability of electricity which had also to some extent retarded progress in the past, would no longer be a problem.

Fishing Harbours. etc.

Fishing harbours from where mechanised fishing vessels—small

and medium size range — could operate with greater safety and added convenience are being quickly developed in all important fishing centres on the west coast. These and a number of other developmental measures already under way are fast building up a strong infrastructure.

No Marketing Problem

On the marketing side the ever-growing demand from abroad for Indian seafoods, especially shrimp, has far out-stripped the present production with the result that the industry is at present able to meet only a fraction of the effective demand. No serious marketing problem is, therefore, anticipated. Even so the Marine Products Export Promotion Coun-

cil is undertaking export publicity measures to build up a positive image for the industry abroad and to diversify the markets and products. The Council is also actively collaborating with international agencies like the International Shrimp Council for promoting the consumption of seafoods, through publicity and propaganda.

Role of Private Sector

The stage is now set for the projected expansion of the industry and what is needed more than anything else is many more stout-hearted entrepreneurs. It is a challenge and an opportunity for the industrial and financial interests of the country at large and I hope the challenge will be answered and the opportunity availed of.

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International Shrimp Council Organized In United States for Shrimp Promotion

THE International Shrimp Council—a world-wide trade association of shrimp producers, exporters and others interested in the marketing of shrimp—has been formed in the United States to aid and expand the sale of shrimp. The first objective of the Council is to create an ever-increasing demand for shrimp in the States. Eventually the Council's long-range purpose will be to develop a world-wide market.

Since the first consideration is to expand the United States market, the Council is already at work on a program to persuade Americans to eat more and more shrimp. Furthermore, the Council is equipped to advise exporters on how to make products that are acceptable to the regulatory agencies of the United States. This is particularly important in regard quality, packaging, labeling and shipping.

These two services—promotion of shrimp and information on regulatory laws—are related. To sustain a profitable market in the United States is necessary if the industries in shrimp-producing countries are to survive. It is to the exporter's advantage to know

what is necessary to get his shrimp into the States and avoid costly seizures of his product.

Shrimp is big business in America. Shrimp is easy to produce, process, package and ship long distances. Competition will continue to increase. As shrimp is a world resource, every year more and more shrimp beds are discovered.

The Council predicts that in three years' time as much as 408 million pounds of shrimp (heads-off weight) will be on the U. S. market. Too much shrimp will depress this market; a depressed shrimp market could spell ruin for the industry.

ISC has its office in Washington, D. C., the capital of the United States, where governmental agencies are centered. This enables the Council to keep shrimp exporters to the States thoroughly informed of existing laws and future legislation.

The Council has employed the J. Walter Thompson Company for services in the United States. This company—a world-wide marketing organization, which has 56 offices in 29 countries—has

had more than 100 years of experience in promoting American products.

Membership in ISC is open to any individual company, corporation, trade association, industrial organisation or any related group of any country or state, and including any country or state, that has any interest whatsoever in the wealfare and extension of the shrimp industry. If you are associated in any way with these classifications, you may join. Present members represent shrimp fisheries in Australia, Bahrain, Barbados, Borneo, Chile, Colombia, Ecuador, French Guyana, Guyana, Hondur, Kuwait, as India,* Iran, Mexico, Nicaragua, Quator, El Salvador, Trinidad, United Kingdom and the United State.

To learn more about this organisation write immediately to the International Shrimp Council, 1200 18th St., NW, Washington, D. C. 20036.

* India is represented in the International Shrimp Council by the Marine Products Export Promotion Council which has taken a collection membership on behalf of Indian exporters of shrimp.

LEAKER SPOILAGE IN CANNED FOODS AND ITS PREVENTION

K. C. De

(The Metal Box Co. of India Limited)

There are three sources of microbiological spoilage of canned foods:-

- (a) Unusually heavy contamination before processing.
- (b) Under-processing.
- (c) Contamination after processing.

Loss of cans from the last source is probably the most persistent in commercial canning and may occasionally rise to serious proportions if proper care is not taken. It is, however, possible to reduce spoilage from this source to insignificant levels by maintaining hygienic conditions in the cannery and observing suitable precautions during canning operations. It is the purpose of this article to discuss the causes of this type of spoilage and the precautions necessary for its control.

It is known that a proportion (usually small) of sound and properly seamed cans become subject to minute leakage through the double seams while they are wet after processing. Such leakage is

associated with softening of the lining compound during processing, the strained state of seams and development of vacuum in the can as it cools. The leak normally seals itself fairly soon and leaves no detectable effect on the contamination while it is susceptible to such leakage, bacteria may enter and by their activity cause spoilage of the product. The can remains vulnerable to post-process contamination in this way as long as the seams are wet.

Leakage of this type becomes more likely if the cans are of defective construction or are damaged during storage and handling; and spoilage resulting from post-process leakage is rendered more probable if the cans are exposed to heavy contamination after processing, in the cooling water, on dirty runways, or in the hands of operatives picking up cans while they are still wet.

In order to minimise leaker spoilage, it is therefore necessary to ensure that cans are as far as possible free from defects which may increase the chances of post-process leakage. It is also equally

important to control the risk of bacterial contamination from cooling water and other agencies by adequate sanitation measures.

It is well worth the while of those responsible for running canneries to check from time to time whether adequate care is being taken to control post-process spoilage. The precautions which may be observed in this connection are briefly discussed below.

CONTROL OF CAN DEFECTS AND CAN DAMAGE

1. Can Construction

On receipt of cans from the supplier, it is desirable to sample the consignment and ensure that the cans are free from any serious defects of construction.

The main defects which are likely to promote leaker type spoilage are:

- (a) imperfectly soldered side-seams
- (b) cocked bodies that may interfere with proper seaming

- (c) over or under-flanging and split flanges beyond certain limits
- (d) defective placement or distribution of lining compound in the ends.
- (e) defective double seams
- (f) defective or damaged curl of ends.

2. Handling and storage of empty cans

From the moment when cans are received, they should be handled and stored with care to avoid denting and damage to the flange. Cans should be stored in ordered stacks, preferably on their sides to facilitate easy withdrawal. The can supplier's advice may be sought on proper storage arrangements.

Finally, before using cans, a flange rectifier should be employed to repair damaged flanges. It is unsafe to rely on the seamer to correct flange distortions during seaming.

3. Filling

Overfilling of cans should be avoided. Overfilling generates excessive stress in the can during processing, which may weaken the double seams and increase the risk of post-process leakage.

4. Double seam defects.

A good double seam can result only from properly constructed can body and ends, and a correctly set seamer.

The top double seam should be checked everyday before start of canning, and at frequent intervals throughout the working day. Hourly checks should be the minimum, and if fast seamers are used, the interval may be reduced

to half-an-hour. As soon as the double seam is found to be sub-standard the seamer should be properly reset.

Seamers should be regularly serviced and worn out parts promptly replaced.

Pressure testing may be carried out to check whether seams are leak-proof but seam evaluation must also include detailed examination of the double seam.

The quality of a double seam should not be assessed merely on the basis of the absolute values of hook lengths and other seam dimensions. These are bound to vary slightly depending on a number of factors, including thickness of the tinplate and its ductility, the type of seamer used, condition of the seamer and its setting, diameter of the can, etc. Experience is necessary in judging the overall efficiency of the double seam and the following are among the factors which have to be considered :

- (i) Appearance, external and on opening the seam.
- (ii) Compactness, which includes :
 - (a) percentage overlap
 - (b) seam tightness
- (c) Correct depth of counter-sink relative to seam length.
- (iii) Lap droop, internal and external.

The can supplier may be consulted for details of the method of seam evaluation. Any unusual difficulty in obtaining a good seam should at once be referred to the can supplier.

5. Handling after seaming

Dents in the can may cause leakage, particularly risky being dents on or near a double seam.

Denting of cans should be avoided at all stages, but more care is necessary after the cans have been filled and are heavier. Dropping cans into the crate after seaming may easily cause denting. If cans are not stacked in crates by hand, the crate receiving cans from the seamer may be placed in a bin filled with water. This helps to break the fall of the can and prevents sharp impact with the crate bottom or with other cans.

In the crate, dents may be caused through overloading or by the crate handle being allowed to fall on the cans. On overhead rails, crates crashing against one another or against any solid projection may lead to denting of cans. A frequent source of leaker spoilage is rough handling of cans after processing. Crates should not be roughly unloaded. If cans are to be conveyed along runways, after cooling, the runways should be so designed as to ensure smooth flow of cans, avoiding sharp drops and twists. Possibility of denting through impact of one can against another on the runway should be kept in mind and avoided as far as possible.

CONTROL OF BACTERIAL INFECTION

1. Cooling water

Bacterial content of water primarily depends on its source. Surface waters e. g., from rivers, ponds etc., and water from shallow wells, are likely to be contaminated. Treated water of municipal supply and water from deep tube-wells are usually free from

significant contamination initially, but may build up a bacterial load in storage tanks, in the course of recirculation, and passage through contaminated pipes.

Chlorination efficiently controls bacterial content of water and is strongly recommended for treatment of can cooling water. For effective control, enough chlorine has to be added to the water to leave a free chlorine residue after combination with any organic matter present in the water. Also, a contact time of 20 to 30 minutes has to be allowed for the chlorine to react fully.

Excessive chlorine should be avoided because of the risk of can corrosion; but addition of sufficient chlorine to maintain a free residual level of 1 p. p. m. in the water after it has been used for cooling cans, is considered adequate for prevention of contamination.

The initial level of chlorine required to ensure a final residual of free chlorine of at least 1 p. p. m. has to be determined by experience. In good quality water it may be the order of 2 to 5 p. p. m.

Chlorine may be added in the form of a solution in water prepared either by mixing bleaching powder with water and decanting the clear supernatant liquid or by diluting a solution of sodium hypochlorite. An inexpensive method of chlorinating a cooling tank or a storage tank is to use an aspirator provided with a stop-cock at the side, by operating which chlorine solution in the aspirator can be run in at the desired rate. When chlorinating a cooling tank, the chlorine solution should be added at the water inlet end, and suitable baffles should be built to provide for contact time.

Automatic chlorinators are available which inject chlorine directly into the water pipeline at a pre-adjusted rate related to the flow of water. The practice of adding bleaching powder direct to the cooling tank is undesirable because of corrosion hazards.

It is important to check the chlorine level of cooling water at regular intervals to make sure of the presence of free residual chlorine. The neutral-orthotolidine test* is a quick, simple and convenient method of confirming presence of free chlorine.

2. Handling after cooling

Cans should preferably remain untouched by human hand after cooling until they are dry. If they are to be removed from crates by hand, the cans should first be allowed to dry in the crate. On being lifted out of the cooling tank, the crate may be tipped to run off water from the top of cans and should then be allowed to remain undisturbed until the cans have dried. If cooling is discontinued when the cans are still slightly warm (95°–105°F), drying should not take an inordinately long time. To reduce drying time, can driers are sometimes used in the U. K. and other countries. On completion of cooling, the crates are unloaded directly into the can drier. Wiping cans to dry them is an undesirable practice and should be avoided if possible. If it must be employed, the wiping rags should be sterilized before use and changed every half-hour.

If belts or runways are used for conveying cans after cooling, they should be kept clean and

sanitized by a continuous drip feed of chlorine solution (which can be arranged with the help of an aspirator of the type mentioned) or by washing with chlorinated water at frequent intervals, to prevent build-up of contamination.

Wet cans are particularly liable to pick up contamination from human hands. This can be demonstrated by bacteriological examination of swabs taken from the surface of cans after handling, and, in fact, leaker type spoilage on a substantial scale has been known to occur as a result of wet cans being handled by persons suffering from infection.

It is not possible to make human hands entirely free from bacteria, but good hygiene helps to minimise the level of contamination. Operatives should be instructed in personal hygiene and suitable facilities should be provided for ensuring personal cleanliness. Before starting work they should wash their hands with soap (preferably containing a germicide) and water, as also after visits to the toilet. Recontamination, about which operatives should be alerted, can occur through the use of dirty towels or by touching parts of the body, especially the nose.

Persons suffering from cold, boils or other infected skin lesions should not be permitted to handle cans after processing.

NOTE: Within the limited scope of this article it has been possible only to outline the measures for prevention of leaker spoilage. Those interested in more detailed information may contact a laboratory connected with the canning industry.

Summary

1. Damaged and defective cans are more susceptible to leaker

* The test is described in 'Some aspects of Food Canning' published by the Metal Box Co. of India Ltd.

spoilage; but such spoilage may also occur in sound cans if they are exposed to heavy contamination during cooling or afterwards, while the double seams are still wet.

2. Precautions which may be taken against leaker spoilage include the following.

- i) Check by statistical sampling and physical examination, the quality of incoming supply of cans. In case of doubt about the quality of cans refer to the supplier.
- ii) Store and handle empty cans carefully to avoid denting and flange damage. Consult your can supplier about the best method of storing cans. Rectify damaged flanges before use.

- iii) Avoid overfilling, which may strain the seams.
- iv) Check top double seams regularly and frequently. Assess double seams by taking into account all relevant features. Re-adjust seamer setting whenever substandard seams are detected. Have seamers serviced regularly and worn out parts replaced.
- v) Minimise can abuse after seaming. Avoid dropping cans into crates, overloading crates and impacts which may damage cans. Avoid rough handling of cans after processing and abuse on runways.
- vi) Chlorinate cooling water and make sure of

the constant presence of free residual chlorine by testing the water at regular intervals and making up deficiency according to requirement. Clean and sanitize runways which carry cans after cooling.

- vii) After cooling, dry cans preferably without touching them by hand or wiping with cloth. If cans are wiped dry, sterilise cloth and change it at frequent intervals.
- viii) Instruct operatives in personal hygiene. Provide suitable facilities for washing and drying hands. After processing do not permit cans to be touched by persons suffering from infection.

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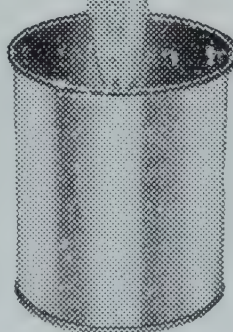
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IMPROVED METHOD FOR SALT-CURING AND SUN DRYING OF MACKEREL

D. P. Sen and N. V. Sripathy

(Central Food Technological Research Institute,
Fish Technology Experiment Station, Mangalore)

Sun-dried salted mackerel is an important, traditionally prepared fish-product of Indian market. The product has a very limited storage life of about 8 weeks. It is subject to mold growth, attack by red halphiles, development of yellow or brown discolouration, rancid and off odours. Contamination with sand is also there. When cooked, it is tough in texture and often has bitter taste.

Very often, market samples of sun dried salted mackerel have high moisture content and this is the primary reason for their microbiological instability. Most of the samples collected in and around Mangalore showed 40–50% moisture content on analysis, whereas for microbiological stability and proper storage, they should have been dried to 30% moisture level. But such a hard-dried product may not be acceptable to the traders and consumers. To prepare a product with a long storage life but with the same high moisture content as the commercial products, the use of preservative

chemicals will be essential. Deteriorative changes due to atmospheric oxygen (or air) are yellow or brown discolouration and rancid odours. These changes can be minimised to a great extent through the use of antioxidants and proper packaging. Proper packaging is important, but

packaging of an improperly dried product may do more harm than good.

To prepare a product with longer shelf life and better eating qualities, a curing mixture has been formulated, the particulars of which are given in Table I. A

TABLE I
CURING MIXTURE

Sl. No.	Ingredient	Role of ingredient	Proportion by weight	Amount (Kg.) for 1000 Kg. Mackerel
1.	Common Salt	Curing	100	220
2.	Sodium Benzoate	Prevents 'reddening' due to helophiles and incidence of soft and mealy tissue	0.25	0.55
3.	Sodium acid Phosphate	Enhances action of sodium benzoate	1.5	3.30
4.	Potassium sorbate	Prevents mold growth	0.5	1.10
5.	Butylated hydroxy anisole (BHA)	Retards yellow or brown discolouration and minimises rancid odours	0.2	0.44
			Total	225.39

procedure for preparation of the product has been outlined which is virtually the same as traditionally practiced. The product so prepared preserves well and remains acceptable beyond 6 months.

Procedure for curing

1. Split the mackerel fish open on the ventral side along the vertebral column with the dorsal side as hinge. Remove gills and

entrails. Wash free of blood and extraneous matter.

2. Apply the curing mixture to the dressed fish instead of common-salt only as in traditional method.

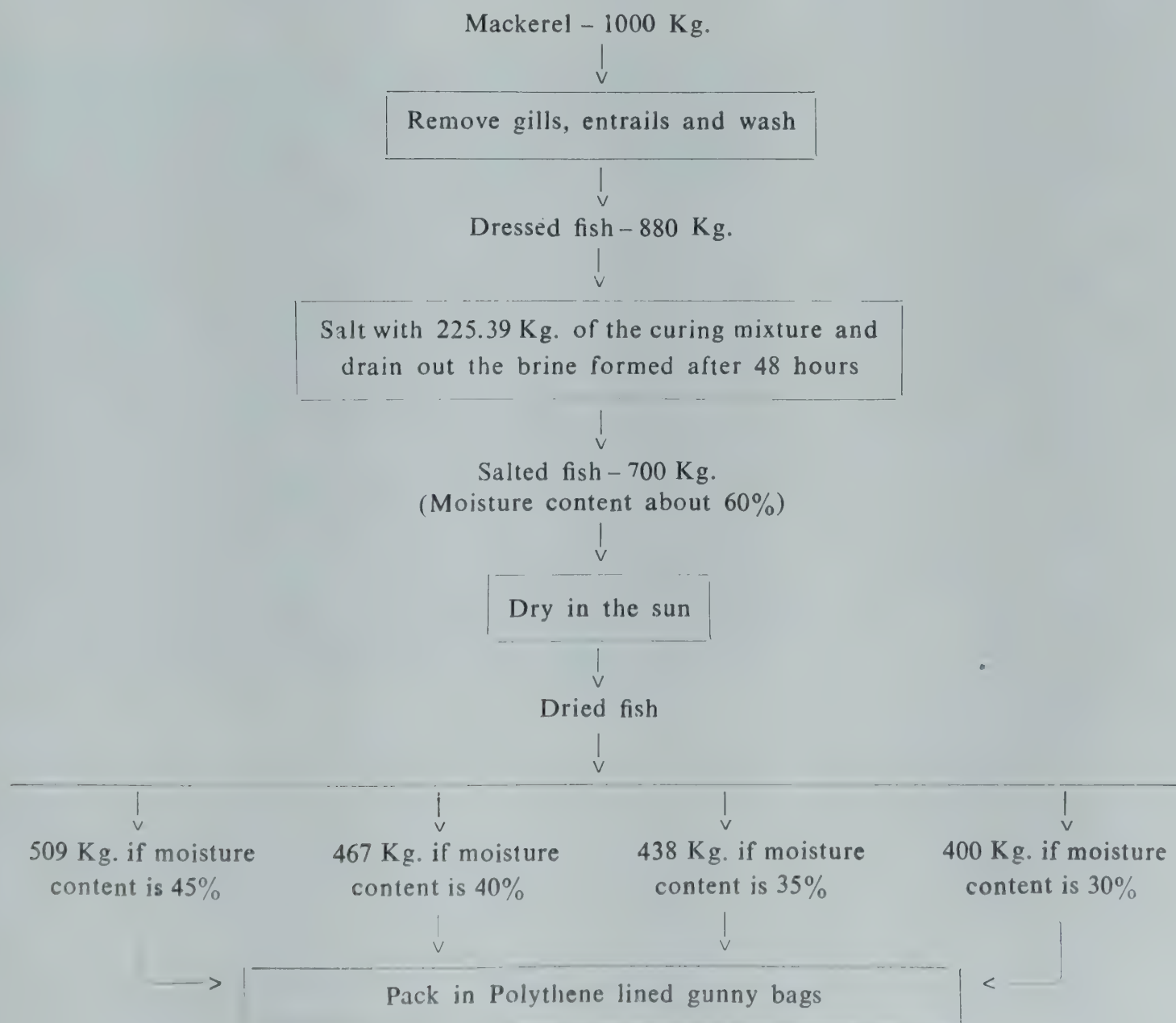
3. Cure for 48 hours to allow for optimum penetration of the preservative chemicals into the tissues of the fish. Drain out the self brine.

4. Lightly wash the surface of the fish (avoid desalting) and dry in the sun till the moisture content is 40 to 45%.

5. Store in polythene lined gunny bags.

The weights of product at various stages of processing are given in Fig. I for giving an idea of material balance.

FIG. I
MATERIAL BALANCE DATA IN THE PREPARATION OF
SUN-DRIED SALTED MACKEREL



Important points to note

1. Strict sanitary conditions and hygienic handling are recommended and help to further improve the keeping qualities of the product.

2. Mackerel which is as nearly fresh as possible should be used to obtain a better product.

3. Fine grain common salt should be used. It should be free of grit, dirt and other water insoluble impurities and be practically free from salts of calcium and magnesium. It is also preferable that the salt used should be free from red halophiles. If the sodium chloride content is less than 98% due to high moisture content, the amount of common salt should be increased proportionately.

4. The preservative chemicals should be thoroughly and uniformly mixed with the salt. The curing mixture is quite stable when kept in polythene lined gunny bags.

5. The preservative chemicals used are permitted in fish products in many European countries, U.S.A. and Japan. They have been recommended in the present curing mixture within admissible limits. In India, sodium benzoate is permitted in some fruit products and it is learnt potassium sorbate will be permitted in certain food products.

6. Drying to a moisture content of 40—45% gives a



*With common salt only after 3½ months of storage
at room temperature*



*With curing mixture after 3½ months of storage
at room temperature*

product which approaches fresh mackerel in texture when de-salted and cooked. Drying to this level of moisture will be complete in two days in bright sun.

7. Drying may be continued to a level of 30% moisture content with definite benefit for keeping quality. If this is properly done and the product is well stored, all preservative chemicals except



With common salt only after 5 months of storage at room temperature.



With-curing mixture after 5 months of storage at room temperature.

BHA may be omitted from the curing mixture. However, the cured product will be tough in texture when the fish is cooked for eating. Market samples are not generally so much hard dried or gains moisture from the atmosphere during subsequent handling and storage.

Acknowledgement

This article has been prepared on the basis of work carried out at the Central Food Technological Research Institute, Mysore and its Fish Technology Experiment Station, Mangalore.

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**EXPORT
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India's exports are subjected by law, to compulsory quality control and pre-shipment inspection and seafoods are no exception.

Inspection and certification by independent and impartial agencies recognised/established by the Government of India under the Export (Quality Control and Inspection) Act, 1963 ensure that only seafoods conforming to the prescribed quality standards are allowed to leave the shores of India.

Thus, Indian seafoods, unique in their intrinsic qualities now reach you with a third party guarantee for quality.

SWISS MARKET FOR SHRIMP AND PRAWNS

I. Pattern of Supplies

As Switzerland is a landlocked country, its entire consumption of salt-water fish and shellfish must be imported. The total consumption of fish is low, well below the average for Western European

sed shrimp and prawns but importers estimate the proportion of canned supplies at about 40 per cent of the total processed shrimp imports, the rest being cooked, peeled and deveined mainly for the quick frozen trade.

Estimated supplies of Shrimp and Prawns

(metric tons)

	1961	1962	1963	1964	1965
<i>Shrimp and Prawns Unprocessed</i>					
fresh, frozen, chilled, salted, in brine or not; simply boiled in water	35	51	72	80	85
<i>Processed</i>					
canned, prepared or preserved	136	224	267	304	336
Total	171	275	339	384	421

countries, but it increased from 1.5 kg. per head before the war to about 4 kgs. in 1965. Generally speaking, consumption is much higher in French-speaking and Italian-speaking Switzerland than in German-speaking Switzerland and lower in the rural areas than in the towns. The existence of well-developed facilities for the sale of deep-frozen food has ensured frozen fish fillets and crustaceans in general a remarkable success on the Swizz market.

Imports of shrimp and prawns have increased fairly regularly since 1961. In 1965, imports of shrimp and prawns (in all forms) stood at about 415 tons, or more than double the 1961 figure. Import statistics do not distinguish between canned and other proces-

In 1965, Switzerland consumed about 33,000 tons of frozen foods, i. e. about 5.5 Kgs. per head of population. Total frozen food consumption in Switzerland during the 1960-65 period rose by nearly 70 per cent and per capita consumption by over 50 per cent and there was a 14 per cent increase in 1965 along. After Sweden, Switzerland is the second most important frozen foods consumer (in per capita terms) in Western Europe. About two thirds of total volume of frozen foods consumption in Switzerland is accounted for by poultry, followed by fish and crustaceans and vegetables. Excluding poultry, nearly 80 per cent of frozen food sales in 1965 was in consumer packages and the rest represented institutional sales.

Frozen fish and shellfish were consumed for a total of 4,000 tons - a gain of 14 per cent over 1964 and making up 15 per cent of total frozen food consumption in 1965. About 14,000 out of 21,000 retail food outlets have freezer cabinets. Nearly 15 per cent of total food outlets are supermarkets or self-service stores which account for about one half of total retail food sales; self-service stores continue to increase in number and they all offer a vast range of prepackaged, convenience and quick-frozen foods. Fish fillets, all kinds of seafoods, ready-to-serve prepared meals, have all become popular items and the variety of pre-packaged and convenience foods available to the Swizz consumer is growing continuously.

II. Sources of imports

Total imports into Switzerland of unprocessed shrimp and prawns have risen from 35 tons in 1961 to 85 tons in 1965. As seen from Table 1 Iceland was the main supplier from 1961 to 1964 but in 1965 China emerged as the leading source of supplies, followed by Australia, Denmark, India, South Korea, Japan, the United States, Cuba, Macao, Spain, Greece and Hong Kong. The share of non-European supplies in the total imports of unprocessed shrimp and prawns increased from about one quarter in 1961 to 80 per cent in 1965.

TABLE 1
Imports of unprocessed Shrimp and Prawns,
By Country of Origin
(metric tons)

	1961	1962	1963	1964	1965
TOTAL	35	51	72	80	85
of which from:					
Iceland	21	19	23	29	—
Denmark	—	6	—	3	6
Norway	—	4	—	1	—
Sweden	2	3	2	—	—
Spain	—	—	1	4	3
Italy	—	—	—	—	4
Greece	—	—	—	1	1
United States	3	2	3	6	4
United Arab Republic	—	5	12	2	—
India	5	—	3	2	5
China	4	—	11	10	24
South Korea	—	—	—	14	4
Hong Kong	—	8	—	—	1
Cuba	—	—	—	—	3
Macao	—	—	—	—	3
Japan	—	—	—	—	3
Australia	—	—	7	5	7

Source: Derived from national statistics and GATT estimates.

It has been mentioned above that the Swizz import statistics do not distinguish between canned, preserved or prepared shrimp and prawns. The cooked, peeled and deveined shrimp which is used in large quantities by the quick-frozen trade for retail as well as catering outlets is statistically presented together with the canned shrimp. Total imports of processed shrimp and prawns (in all forms) into Switzerland have expanded from 136 tons in 1961 to 336 tons in 1965, i. e. at an annual rate of 25 per cent during this period. It appears from the data shown in Table 2 that the United States ranks as the leading supplier and traders feel that the bulk of these supplies consists mainly of canned shrimp in retail packs. There has been a marked advance in the relative position as well as in the absolute of volume of shipments from Denmark whereas the Norwegian processed shrimp has

since 1962 been losing ground. The geographical pattern of imports of processed shrimp in recent years has also been influenced by the importance of supplies coming from Japan and South Korea. Imports from India picked up in 1965 following the low level of 1964.

III. Price information

Apart from the somewhat higher trading margins and overheads in transport, distribution and promotional activities in Switzerland, the general trend in the wholesale price of shrimp and prawns as far as the Swizz market is concerned has followed very closely the upward movement in international prices. Calculations based on import c. i. f. unit values for processed shrimp and prawns (in all forms) were \$. 1.84 per Kg. in 1965, \$. 1.62 in 1964 and \$. 1.55 in 1961. Table 3 offers data about import prices for different origins.

TABLE 3
Import Unit Values (C. I. F.)
for Shrimp and Prawns
(US \$ per kg.)

	1964	1965
<i>Unprocessed shrimp and prawns</i>		
From China	2.20	1.74
South Korea	1.63	1.84
<i>Processed shrimp and prawns</i>		
From United States	1.33	1.54
Denmark	2.02	2.20
Norway	2.27	2.93
Sweden	1.63	1.66
Japan	1.43	1.84
South Korea	2.12	2.10
India	1.74	1.18
Average, from all sources	1.62	1.84

Source: Derived from official trade returns.

TABLE 2
Imports of processed Shrimp and Prawns
(Canned, Prepared or Preserved), By country of origin
(metric tons)

	1961	1962	1963	1964	1965
TOTAL	136	224	267	304	336
of which from:					
United States	70	87	130	175	147
Norway	22	31	28	15	7
Sweden	18	30	26	20	23
Denmark	14	35	40	55	89
Japan	—	—	—	3	27
United Arab Republic	—	10	12	—	—
India	4	27	17	3	11
South Korea	—	—	3	28	17

Source: Derived from national statistics.

Listed below are wholesale and retail prices which were generally prevailing in Switzerland during December 1966.

	Price (Swiss Francs)	
	Stockist	Retail
<i>Quick-Frozen</i>		
(Cooked and Peeled)		
<i>Migros</i>		
Small shrimp in 100gr. polybag	...	1.50
<i>Co-op</i>		
Small shrimp in 100gr. polybag	...	1.75
<i>Frionor</i>		
Small Nordic deep sea prawn in 100gr. polybag	1.90	2.55
<i>Canned</i>		
(Cooked and Peeled)		
<i>United States De Jean's</i> brand, small shrimp, 5 ozs. and/or 142 gr.	...	2.80
<i>Denmark ICECAP</i> brand, tiny shrimp, 5½ ozs. net weight (155gr.)	2.30	3.10
<i>Denmark, ROYAL GREENLAND SHRIMPS</i> , net weight 4½ ozs. (127gr.)	2.30	3.10
<i>India</i> , small shrimp, net weight 4¾ ozs. (135 gr.)	...	2.65

IV. Sanitary and marking regulations

A decree dated 11 October 1957 ("Eidgenössische Fleischschauverordnung") which mainly sets out regulations regarding chilled and frozen meat also contains regulations governing the sale of frozen fish and fish products. Article 6 of this decree stipulates that such deep frozen products must pass through an unbroken cold chain to the final consumer at a temperature of -15°C or below. Regulations according to the Decree on the Traffic in Foodstuffs and Food

Handling Materials of 26 May 1936, as modified in April 1955, govern the use of preservatives and containers. For instance, the containers for the manufacture, transportation, and preservation of foodstuffs cannot consist of lead or zinc or of a metal alloy which contains more than 10 per cent of lead. Moreover, the Swiss legislation consists of a number of laws, implementing ordinances, and decrees dealing with the subject of marking and labelling requirements. In general, the English language is acceptable for marking and labelling. Small packages of foodstuffs prepared for retail sale weighing from 50 grs. to 2Kgs. must show plainly visible the net weight (filled weight) in kilogrammes and grams. Each can of shrimp and prawns, for instance, must show the following information: the name of the manufacturing firm, and of the country or location of manufacture; the exact description of the contents; the wording "limited durability" or "semi-preserved", if it contains a product not fully preserved. Containers and packages containing materials for the preservation of foodstuffs must show the chemical composition of the preservative material regardless whether a trade name is used in addition to the composition.

V. Tariffs and trade regulations

Nearly all Swiss customs duties are specific and are assessed on the gross weight of the products concerned (including packing). If, however, packing is so light as to constitute an attempt to evade duty, the customs will make up the difference by the application of a special tare tax. This is also levied on foods delivered unpacked out of bond. The Swiss tariff scheme is based on the Brussels

Nomenclature. Switzerland permits dutyfree imports of shellfish from her EFTA partners, the United Kingdom, Sweden, Norway, Denmark, Portugal and Austria. For non-EFTA suppliers the rate of customs duty is Sw. F. 0.30 per kg. for unprocessed shrimp and prawns and Sw. F. 0.35 per kg. for processed and canned shrimp and prawns. In addition the veterinary fee of Sw. F. 13 per 100 kgs. gross weight has to be paid on the imports from non-EFTA sources and Sw. F. 1 per 100 kgs. gross weight on imports from EFTA sources. In addition, there is a statistical stamp tax of 3 percent and if goods move from one Swiss canton to another they are subject to another inspection by the local health authorities, for which a fee varying Sw. F. 6 to Sw. F. 8 per 100 kgs. is charged.

VI. Distribution and marketing channels

Switzerland's import channels are highly developed. The country abounds with experienced importers, agents and distributors, many of them even cover other European markets. Medium and small size retail outlets buy imported groceries through wholesalers, who in most cases are also importers, or through purchasing organisations. Large retail and department stores prefer to import directly from foreign processors and exporters, and in fact, the large co-operatives and chain organisations maintain special purchasing offices.

Listed below are a few trading firms (wholesaler / importers) which handle a variety of food items, although some of them deal exclusively in fish and fish products only. These firms would welcome offers and enquiries from suppliers:

FADCO, S. A.,
15 Rue du Jen-de-l' Arc,
Geneve (GE).

DEMAUREX FRERES,
Denrees Coloniales en Gros,
Rte. de Lausanne 22-24,
Morges (VD).

MARQUART-
CONGELATION, S. A.,
36 Rte. Acacias,
Geneve (GE).

AUGUST STADEL,
Arnold-Bocklinstr-43,
Basel.

JEAN HAECKY
IMPORT A. G.,
Lanfenstrasse 12-18,
Basel.

SAPRODAL A. G.,
Solothurnstrasse 15,
Basel.

HANS W. SELEGER,
Theatarstrasse 12,
Zurich.

REINHOLD MERZ,
Birmendorfstrasse 143,
Zurich.

HANS GIGER & CO.,
Gutenbergstrasse 3,
Berne.

POLE-NORD S. A.,
Rue du Liseron 6,
Lausanne.

COLGRO,
Thunstrasse 95,
Berne.

Most of the independent wholesalers and importers belong to *L' Union des Agents Suisses en Denrees Coloniales en Gros* (4 Place Pury, Neuchatel) and this Association is ready to assist foreign exporters in establishing contacts and locating agents.

Three main types of integrated organisations in the retail food trade of Switzerland can be dist-

inguished: the consumer co-operative societies, multiple shop organisations and department stores. Besides these three integrated and concentrated sectors which are characterized by their centralised purchasing, common brand name policies, and a closer identity of wholesale-retail channels, also important in the Swiss processed food distribution system are the retailer owned wholesale organisations and voluntary wholesale chains.

Consumer co-operatives

The two-large co-operatives, l' Union Suisse des Co-operatives de Consommation (Verband Schweiz Konsumvereine) and La Federation des Co-operatives MIGROS accounted in 1965 for almost one third of the total food sales in Switzerland and for almost two third of the self-service stores.

The addresses of the centralised purchasing / importing offices of these organisations are :

L' Union Suisse des
Co-operatives de Consom-
mation,
Thiersteiner Aelee 14,
Basel.

Federation of MIGROS
Co-operatives,
P. O. Box 169,
152 Limmatstrasse, Zurich.

Multiple shop organisations

This form of retailing organisation is responsible for about 7 per cent of the total retail food trade of Switzerland. Most important of these are :

DENNER,
Grubenstrasse 12,
Zurich.

KONSUMVEREIN ZURICH
(K. V. 2),
Badenerstr 15, Zurich.

Department stores

Alongside the general development of "self-service" selling and supermarkets in Switzerland, the biggest transformation has been the change-over in a very large number of department stores from counter-service to self-selection selling, giving the public direct access to merchandise. Many department stores in Switzerland have moved into groceries and frozen foods and usually carry a wide assortment of speciality foods. The share of department stores in food trade in Switzerland is about 2 per cent. The importance of department stores in relation to shrimp and prawns from developing countries lies in the fact that these stores can help "build a reputation" and play a major role in creating a wider consumer acceptance.

The leading department store group in Switzerland is JELMOLI Group comprising JELMOLI (Zurich), INNOVATION (Lausanne) and GRAND PASSAGE (Geneva). Their control purchase office is :

LA CENTRALE D' ACHATS
2. L. G.,
Sihlstrasse 20,
Zurich.

While about one half of total procurement of foodstuffs is done through the centralised office the individual department stores also engage in direct import and offers and enquiries can also be addressed to them individually at the following addresses :

JELMOLI,
Seidengasse 1.
Zurich.

INNOVATION,
5 Rue de Pont, Lausanne.

AU GRAND PASSAGE,
15 Rue du Marche, Geneve.

Besides the JELMOLI Group, the other leading department stores in Switzerland are:

ZUM GLOBUS A. G.,
Eichstrasse 27, Zurich.

OSCAR WEBER,
Bahnhofstrasse 75, Zurich.

LE GROUPE
RHEINBRUCKE
Greifengasse 24, Basel.

LOEB FRERES,
Spitalgasse 47-50, Bern.

Retailer owned wholesale organisations

The market share of the retailer owned wholesale organisations in Swiss food trade is about 25 per cent and covers about 6,400 retail outlets. The retailer owned wholesale organisations are very important in Switzerland and perhaps the oldest purchasing organisation known in Europe is the Schweizerische Handelsgesellschaft in Zurich, which was set up in 1883.

The leading such organisations in Switzerland are:

USEGO,
Societe Suisse d'Achats,
Olten.

LA LIGA,
Falkensteinerstrasse 40,
Basel.

SCHWEIZERISCHE
HANDELSGESELLSCHAFT,
Dubendorf/Zurich.

HOWEG,
Cooperative d'Achats pour
Hotels,
Granges (SO).

Voluntary Chains

As in other European countries, the food distribution sector in Switzerland has also witnessed the growth in the activities of voluntary chains. The growing success of voluntary wholesale

chains can be explained by the fact that by concentrating their purchasing power they have been able to cut down their operating costs and traditional wholesale margins. Many of these chains bear close relation with affiliates in other Western European countries.

The leading chains are:
CENTRALE SUISS-VEGE,
33/2 Fraubrunnen/Berne.

L'ORGANISATION TOURA,
Dorfstrasse 27, Zurich.

ALRO,
3 Avenue d'Ouchy, Lausanne.

VII. Organisation of the cold chain

The dominant frozen food organisations in Switzerland are FRISCO/FRIONOR and FINDUS. FRISCO, is a part of the Roco Food Packing Company (located at Rorschach) and FRIONOR (the leading Norwegian fish export group, the Norsk Frossen Fisk) uses the FRISCO distribution network. FINDUS whose international headquarters are located in Switzerland (at Vevey) is especially strong. Both FINDUS and FRISCO/FRIONOR handle shrimp and prawns in a big way. Their traditional source of supply has hitherto been Norway but on account of the relative expensiveness of Norwegian shrimp and difficulties of obtaining adequate supplies have forced both of these organisations to look elsewhere. FRIONOR has done pioneering work in Switzerland in establishing market for frozen fish fillets and has an extensive and well-organised FRISCO distribution network. Although FRIONOR is affiliated with Norwegian interests, it has shown interest in promoting shrimp of other origins (e. g. it handled shrimp from Kuwait in 1966) because it has been in its own

economic interest to do so. FRIONOR/FRISCO have thousands of regular clients (catering, department stores, cooperatives) in Switzerland and is very much interested in long-term contracts with overseas suppliers. The same is also true of FINDUS. For a long time FINDUS was committed to supplies from Norway and for the same reason as FRIONOR, it has also experienced supply difficulties. Both these firms, which are of international repute, would welcome offers of quick-frozen supplies of the highest quality and are open to propositions aiming at long-term contracts.

FINDUS Products Limited,
Vevey.

MAX SCHMID,
FRIONOR,
NORGE FISK,
Neuenstrasse 63,
Basel.

The preceding section lists the names and addresses of many of the independent importers and wholesalers of frozen shrimp and prawns as well as the purchasing organisations attached to the Co-operative societies, multiple chains, department stores and voluntary wholesale groups. The large MIGROS Cooperative, which accounts for about 15 per cent of total food sales in Switzerland, has made a good headway in the sale of frozen foods which are specially packed for MIGROS. MIGROS maintains direct contacts in the shrimp producing countries and also because of large quantities it handles and its policy against brand goods (unless it is its own), it is a promising outlet for new-comers who can meet MIGROS specifications.

Reproduced from the Market Survey Report for Shrimp and Prawns in West Europe conducted by the GATT International Trade Centre

NEWS & NOTES

THREE FISHERIES INSTITUTES BROUGHT UNDER ICAR'S CONTROL.

The following three National Institutes dealing with Fisheries Research which were under the direct control of the Ministry of Food & Agriculture, have, with effect from 1-10-1967, been brought under the administrative control of the Indian Council of Agricultural Research :

- 1) The Central Marine Fisheries Research Institute, Mandapam Camp.
- 2) The Central Institute of Fisheries Technology, Ernakulam.
- 3) The Central Inland Fisheries Research Institute, Barrackpore (West Bengal).

The decision to transfer the administrative control of these as well as eight soil conservation, research, demonstration and training centres was taken by the Ministry of Food & Agriculture recently with a view to bring administration, planning and development of research connected with food and agriculture under one Umbrella.

While transferring the administrative control of the above Institutes, the Ministry has decided to give requisite annual grants-in-aid to the ICAR for financing their activities.

WORLD PRAWN CATCH DOUBLED SINCE 1938

The world catch of prawns and shrimps nearly doubled between 1938 and 1965, according to

a recent publication of the Food and Agriculture Organisation. Its Bulletin of Fishery Statistics for Crustaceans reveals that the prawn and shrimp catch rose to 641,000 metric tons from 335,000.

Significant gains were made by developing countries who are finding hard-currency markets for shrimps and prawns. India exported nearly \$US 10 million worth of shrimps and prawns in 1965, compared with \$US 3.6 million worth of shrimps in 1958. In three years, Pakistan more than quadrupled its shrimp and lobster exports (which rose from \$US 1.5 million in 1962 to \$US 4.93 million in 1965).

Figures for Venezuela show \$US 3.4 million in exports in 1965 against \$US 8,000 in 1958.

PRAWN CULTURED FROM EGG STAGE TO MATURITY IN JAPAN

Prawns have been raised in captivity to market size for years in Indonesia, Singapore, India the Philippines and Japan.

Prawn 'farmers' have in the past relied on stocks of young wild prawns for their operations but in recent years the concept has been changed by a Japanese scientist, Dr. Motosaku Fujinaga by finding a way to culture prawns from the egg stage to maturity in six to 10 months.

Dr. Fujinaga spent 30 years perfecting his technique. In 1960 he found the Prawn Culture Co., the first and only business enterprise in the world to produce and sell prawns raised from eggs to

market size. Now there are seven other companies that cultivate prawns in this manner in Japan.

Dr. Fujinaga believes that production of cultured prawns could increase to at least 1,000 tons a year from the present level of 200 tons. Japan imports about 25,000 tons of prawns a year, including more than 600 tons from Australia, and the quantity is increasing.

More than 600 restaurants in Tokyo serve tempura which is understood to have a European origin, and was brought to Japan by trading vessels centuries ago. Over the years it has been changed, refined and ritualised by Japanese skill and taste.

In a typical tempura restaurant the customer can select his prawns from an aquarium in the room. They are killed, beheaded and peeled (except for the tail fan), dipped in egg-and-flour batter and dropped into hot cooking oil. In about three minutes the golden brown, smoking hot prawns are served. The Japanese dip them into a mixture of dashi (a slightly sweetened soy sauce) and ground white radish before they eat them.

A PORTABLE MACHINE TO SKIN FISH

It is reported that a portable machine designed to skin 'almost any size of fish-up to 9 inches wide and any length' has been put on the market by a US firm and is offered for \$ 4,750. It is being described as a simple and economical machine designed to

meet the needs of the small and medium sized producer. The machine can skin sharks also.

The machine is run by a 1½-horsepower motor and needs 220-volt electricity and a ½-inch water supply.

SMALL BOAT RADAR

The Decca D 101, designed specifically for the United States pleasure boat market is reported to be equally suitable for fishing vessels because of its high performance and reliability.

The D 101 has been built to conform to stringent reliability tests laid down by the American Government's Advisory Group on Reliability of Electronic Equipment (AGREE).

The radar has a maximum range of 15 nautical miles and it can be operated off 12, 24, 32,

110, 220 volts D. C., and 115 or 230 volts A. C., 50 or 60 c/s single-phase operation.

The assembly comprises three units — a scanner unit, a display unit and a power unit.

ARTIFICIAL REEF FOR LOBSTERS

An artificial reef constructed with rock—blasted and dredged from the site of a new U. S. Coast Guard station — has become a haven for lobsters at Boothbay Harbour, Me., reports the United States Department of the Interior's Bureau of Commercial Fisheries.

The density of lobsters on the five-month-old reef already exceeds half that which exists in adjacent natural habitat. The reef occupies about 10,000 square feet of ocean bottom in 50-80 feet of water. The bureau is studying the site

to determine the best methods of constructing man-made lobster habitats.

FRANCE—MARKING OF PRESERVED AND QUICK FROZEN FOOD

By two decrees issued on 5th January 1967, the French authorities have laid down rules for the marking of preserved food and new rules for the marking of quick-frozen food.

As regards preserved food, a distinction is made between "canned food" (conserves) and "semi-preserved food" (semi-conserves). The date of production must be indicated either in full or in code.

Imported products can be marked (coded) in accordance with the rules in force in the country of production, provided these have been communicated in advance to the French Service de la repression des fraudes.

NEW INDIA FISHERIES LIMITED

KARUVELIPADI

COCHIN-5

The only Fishing-cum-Processing Company in the country

- | | | |
|--|---|------------------|
| ★ Catch of Prawns 1964/65 | — | Over 1200 Tonnes |
| ★ Export of Frozen Prawns during the same period | — | 772 Tonnes |
| ★ Earnings in foreign exchange | — | Over 49 Lakhs |

Quality control strictly adhered to from the time the shrimp is landed aboard the trawler

OVERSEAS ENQUIRIES GIVEN SPECIAL ATTENTION

Item-wise Exports of Marine Products from India
During January to June 1966 & 1967

Items	January to June 1966		January to June 1967	
	Qty. (kgs.)	Value (Rs.)	Qty. (kgs)	Value Rs.
1. Shark fins & Fish Maws	41,670	3,19,016	1,56,445	21,17,013
2. Dried Prawns	6,67,894	24,02,997	6,89,450	41,09,626
3. Dried Fish	29,27,762	46,35,500	26,93,207	65,49,066
4. Frozen Prawns	42,37,501	3,35,23,195	57,69,850	6,58,44,242
5. Frozen Lobster Tails	39,659	5,43,311	49,511	9,19,006
6. Frozen Froglegs	2,06,114	14,11,440	4,95,449	58,45,834
7. Frozen Fish	90	415	958	9,131
8. Canned Fish	...	...	1,302	13,672
9. Canned Prawns	5,81,276	56,56,921	11,84,603	1,80,32,556
10. Fish Pickles	884	5,250	1,090	9,369
11. Prawns Powder	8,423	12,982	1,091	3,027
12. Cuttle Fish Bones	8,096	22,998	1,322	21,668
13. Turtle Meat	1,134	24,964	1,337	34,873
14. Beach-de-mer	8,795	26,005	8,710	10,974
15. Sea Shells	2,400	16,350	60,120	11,952
16. Fish Oil	9,280	10,700	20,160	30,306
17. Sea-weeds	...	...	1,57,040	5,67,164
18. Prawn Pickles	...	...	109	918
19. Shrimp Powder	...	...	4,379	16,687
20. Prawn Meal	...	...	6,000	6,353
21. Prawn Bit	...	...	4,498	21,119
22. Shark Snouts	...	...	154	2,525
Total	87,40,978	4,86,12,044	1,13,06,785	10,41,77,081

Country-wise Exports of Frozen Prawns from India
During January to June 1966 & 1967

Countries	January to June 1966		January to June 1967	
	Qty. (kgs)	Value (Rs.)	Qty. (kgs)	Value (Rs.)
U. S. A.	33,88,437	2,57,58,196	46,60,857	5,02,91,960
Japan	5,33,246	49,90,098	8,12,550	1,11,43,531
Australia	2,76,768	24,69,928	2,28,169	35,94,003
Netherlands	8,176	61,002	8,556	1,40,154
U. K.	9,093	71,407	16,854	1,45,016
Spain	1,814	13,310	...	...
Denmark	227	2,251	...	...
France	10,627	93,630	34,270	4,20,795
Belgium	9,113	63,373	4,196	70,767
Aden	...	...	1,073	12,029
West Germany	..	...	23	411
Jamaica	...	...	3,302	25,576
Total	42,37,501	3,35,23,195	57,69,850	6,58,44,242

**Country-wise Exports of Canned Prawns from India
During January to June 1966 and 1967**

Countries	January to June 1966		January to June 1967	
	Qty. (Kgs.)	Value (Rs.)	Qty. (Kgs.)	Value (Rs.)
U. K.	1,64,736	13,87,389	3,93,810	55,09,453
U. S. A.	1,81,575	18,11,129	3,71,435	56,63,475
Netherlands	4,114	47,667	15,587	3,15,680
France	1,77,469	18,28,537	2,30,995	38,69,218
Italy	6,820	87,370	13,032	2,34,196
Denmark	3,900	39,760	16,764	3,15,605
Mozambique	407	4,418	170	3,425
Australia	2,295	29,350	44,796	6,25,713
Sweden	14,650	1,63,822	11,777	1,58,736
West Germany	11,532	92,663	2,982	55,879
Switzerland	4,791	56,964	784	17,281
Puerito Rico	3,282	40,985	7,451	1,03,861
Nigeria	176	1,690	...	...
Belgium	1,846	21,799	10,886	1,32,184
Greece	507	4,440	2,368	47,055
New Zealand	816	9,392	1,335	23,596
Cyprus	600	10,252	2,490	56,835
Aden	460	7,195	1,353	11,580
Canada	...	...	3,490	41,414
Finland	340	3,835	500	6,395
Ethiopia	65	1,091	...	...
Lebanon	170	2,086	272	6,281
Hawai	564	3,215	...	...
Jamaica	161	1,872	...	...
Norway	...	...	168	3,739
East Germany	...	...	51,133	8,09,599
Mauritius	...	...	231	4,647
Tanganyika	...	...	748	15,869
Bahrein Island	...	...	46	840
Total	5,81,276	56,56,921	11,84,603	1,80,32,556

Country-wise Exports of Dried Prawns from India
During January to June 1966 and 1967

Countries	January to June 1966		January to June 1967	
	Qty. (Kgs)	Value (Rs.)	Qty. (Kgs)	Value (Rs.)
Australia	1,090	5,695	1,896	16,886
U. K.	16,733	84,103	17,138	1,22,796
Hong Kong	3,79,019	14,13,459	5,02,249	26,50,286
New Calidonia	1,162	7,006	1,416	13,780
Netherlands	13,326	49,219	6,319	61,504
Ceylon	1,59,014	3,89,866	...	...
U. S. A.	36,542	1,60,345	28,919	3,32,300
Canada	2,598	18,962	10,155	1,10,506
Daman	660	1,670	...	...
Japan	6,000	29,544	12,430	87,358
Trinidad	576	2,842	1,075	12,056
Singapore	32,440	1,22,782	38,682	2,10,905
Jamica	11,716	63,854	13,299	1,10,807
Fiji Islands	381	2,790	...	...
Hawai	6,637	50,860	7,180	86,646
New Zealand	...	...	2,032	7,760
Mauritius	...	...	7,119	44,401
Kuwait	...	...	9,670	62,233
S. Arabia	...	...	4,140	19,914
Malaya	...	...	22,002	1,41,814
Belgium	...	...	9	74
Bahreïn	...	...	3,720	17,600
Total	6.67.894	24,02,997	6,89,450	41,09,626

Country-wise Exports of Dried Fish from India
During January to June 1966 and 1967

Countries	January to June 1966		January to June 1967	
	Qty. (kgs.)	Value (Rs.)	Qty. (kgs.)	Value (Rs.)
Ceylon	28,81,820	45,07,742	25,80,047	61,01,149
Malaya	100	968	...	...
Mauritius	37,456	87,417	1,01,388	3,51,569
France	3,045	7,917	...	...
E. Africa	610	1,764	...	...
Singapore	1,669	8,570	3,439	14,496
Fiji Islands	1,890	8,116	...	...
U. K.	1,040	12,641	5,811	69,969
S. Arabia	132	365	...	...
Kuwait	...	...	195	588
U. S. A.	...	...	60	1,128
Kenya	...	...	705	2,975
Tanganyika	...	...	302	1,191
Seychellus	...	...	30	232
Australia	...	...	128	1,115
Aden	...	...	175	544
T. Oman	...	...	58	181
Mozambique	...	...	804	3,603
Bahrein	...	...	65	326
Total	29,27,762	46,35,500	26,93,207	65,49,066